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PROPOSED PETALUMA RIVER PROJECT MODIFICATION

sonoma county tidelands
harbor & beach commission

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California State Department of Fish and Game
Sonoma County Flood Control and Water Conservation District
City of Petaluma
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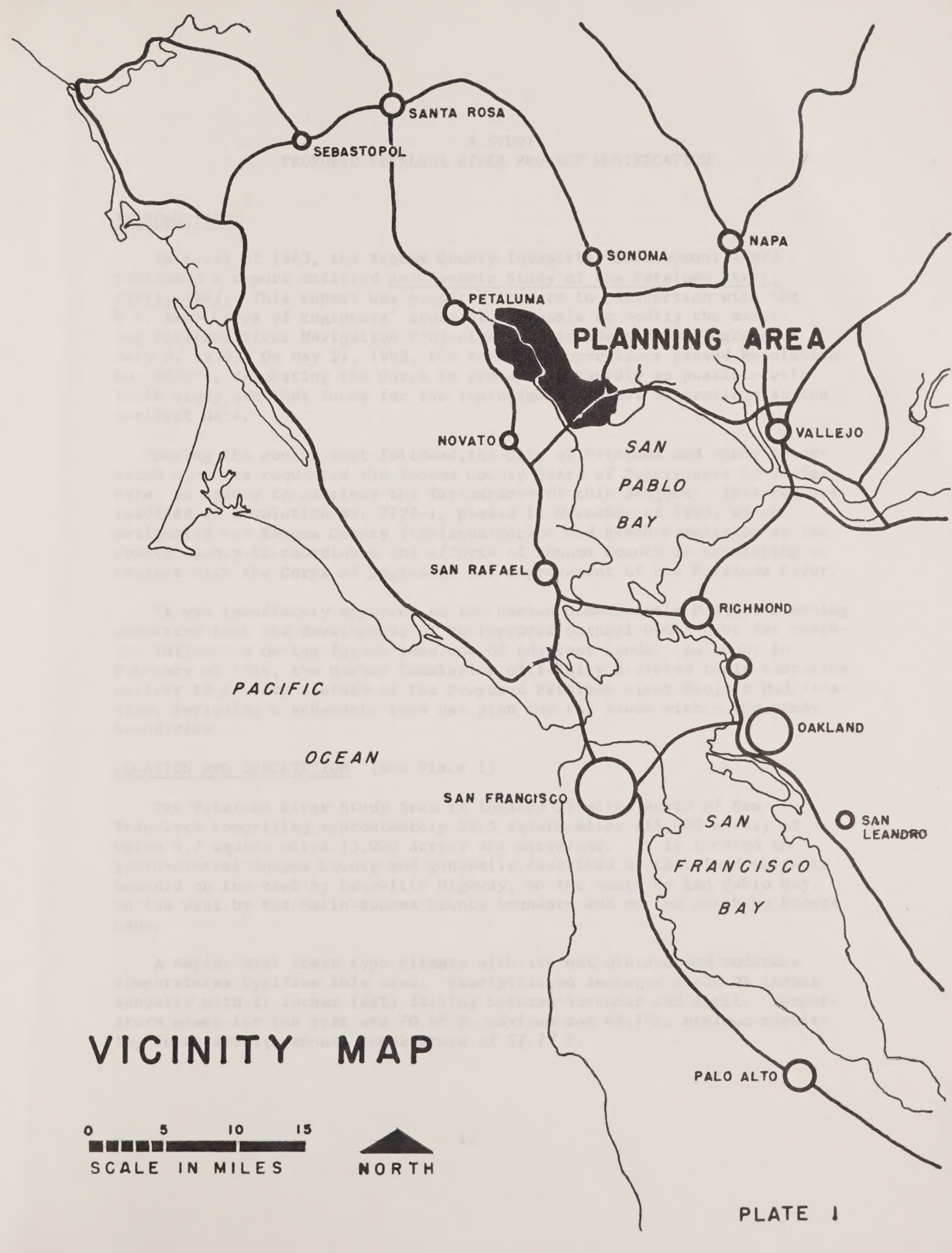


VICINITY MAP

PLATE 1

VICINITY MAP

PLATE 1

A STUDY
PROPOSED PETALUMA RIVER PROJECT MODIFICATION

INTRODUCTION

In April of 1963, the Sonoma County Industrial Development Board published a report entitled An Economic Study of the Petaluma River, April, 1963. This report was prepared for use in conjunction with the U.S. Army Corps of Engineers' study of proposals to modify the existing Petaluma River Navigation Project which was adopted by Congress on July 3, 1930. On May 21, 1963, the Board of Supervisors passed Resolution No. 6070-1, requesting the Corps to proceed as rapidly as possible with their study and that funds for the improvement thereof be provided at the earliest date.

During the months that followed, the City of Petaluma and other interested agencies requested the Sonoma County Board of Supervisors to designate an agency to continue the furtherance of this project. This request resulted in Resolution No. 7727-1, passed in November of 1963, which designated the Sonoma County Tidelands-Harbor and Beach Commission as the county agency to coordinate the efforts of Sonoma County in developing a project with the Corps of Engineers for improvement of the Petaluma River.

It was immediately apparent to the Harbor Commission's Project Planning Committee that the development of an improved channel would have far reaching influences on the future land use of adjacent lands. As such, in February of 1964, the Harbor Commission officially directed their executive officer to prepare a study of the proposed Petaluma River Project Modification, including a schematic land use plan for the lands within the study boundaries.

LOCATION AND DESCRIPTION (See Plate I)

The Petaluma River Study Area is located 27 miles north of San Francisco comprising approximately 23.5 square miles (15,000 acres) of which 4.7 square miles (3,000 acres) are marshland. It is located in south-central Sonoma County and generally described as that land which is bounded on the east by Lakeville Highway, on the south by San Pablo Bay, on the west by the Marin-Sonoma County boundary and on the north by Browns Lane.

A marine west coast type climate with its wet winters and moderate temperatures typifies this area. Precipitation averages about 24 inches annually with 21 inches (88%) falling between November and April. Temperature means for the year are 70.6° F. maximum and 44.7°F. minimum resulting in an average annual temperature of 57.7° F.

The Petaluma River is a tidal estuary serving as a drainage basin for the southwest slopes of the Sonoma Mountains, the southern tip of the Cotati Valley and eastern slopes of the Olompoli and Novato Mountains.

A gentle northeast-southwest slope typifies the study area with only a small portion in the vicinity of Sears Point, having a slope of 20% or greater. Excluding this small portion in excess of 20% slope, contours range from 3 feet below MSL on Hog Island to 200 feet above MSL near the eastern boundary of the study area. Over 80% of the study area is below the 50 foot contour and 60% below the 10 foot contour.

EXISTING AND PROJECTED CIRCULATION (See Plate II)

Thoroughfares

Much of the study area is bounded by two freeways (U.S. 101 and State Highway 37) and one major highway (Lakeville Highway) in such a way as to approximate the three legs of a triangle.

U.S. 101, the most westerly of three north-south interstate highways which traverse the entire length of California, serves as direct access to every coastal county (with the exception of Santa Cruz County), plus Alameda and Santa Clara Counties. These counties contain over two-thirds of the State's 18,000,000 population.

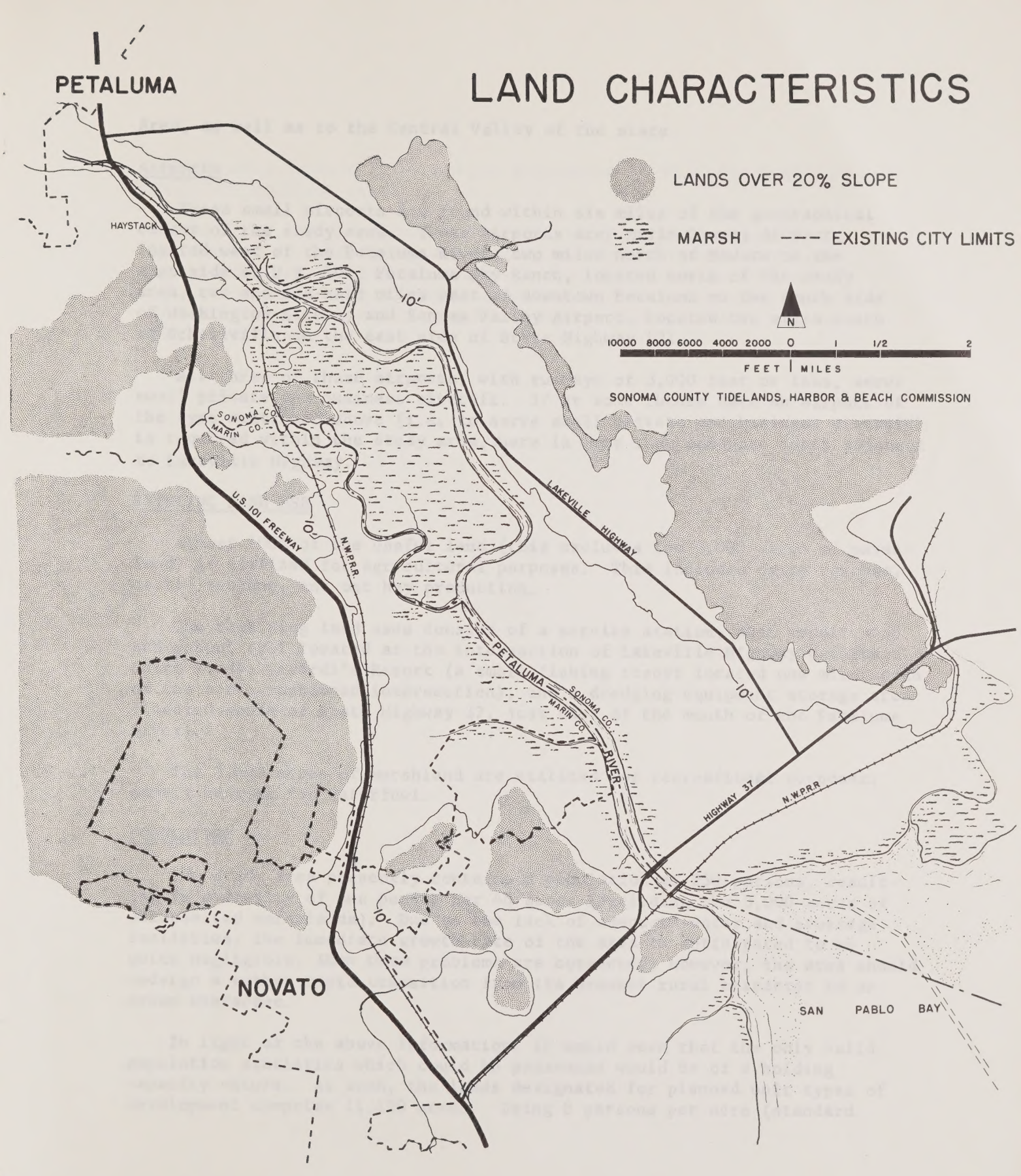
State Highway 37, running along the periphery of northern San Pablo Bay, serves North Marin and South Sonoma Counties as the major route to the North-East Bay region and Central California (via Interstate 40).

Lakeville Highway, a shortcut from U.S. 101 (at Petaluma) to State Highway 37, is one of a series of county roads connecting the City of Petaluma with the City of Sonoma.

While Highway 37 will continue to function in its same capacity for the North Marin area, the proposed Petaluma-Napa and Valley of the Moon expressways will be used by the South Sonoma County region for access to the Northeastern Bay and Central California regions.

Railway System

Northwestern Pacific Railroad is the only railway serving Sonoma and Marin Counties, roughly paralleling U.S. 101 from Ignacio north to Cloverdale, with spurs to Sebastopol and Schellville. Of primary importance to our study area is the spur which parallels Highway 37 from Ignacio to Schellville. This importance lies not in the Northwestern Pacific Railroad's immediate service area, but its junction with the Southern Pacific Railroad near Schellville, which offers a route to the East and South Bay

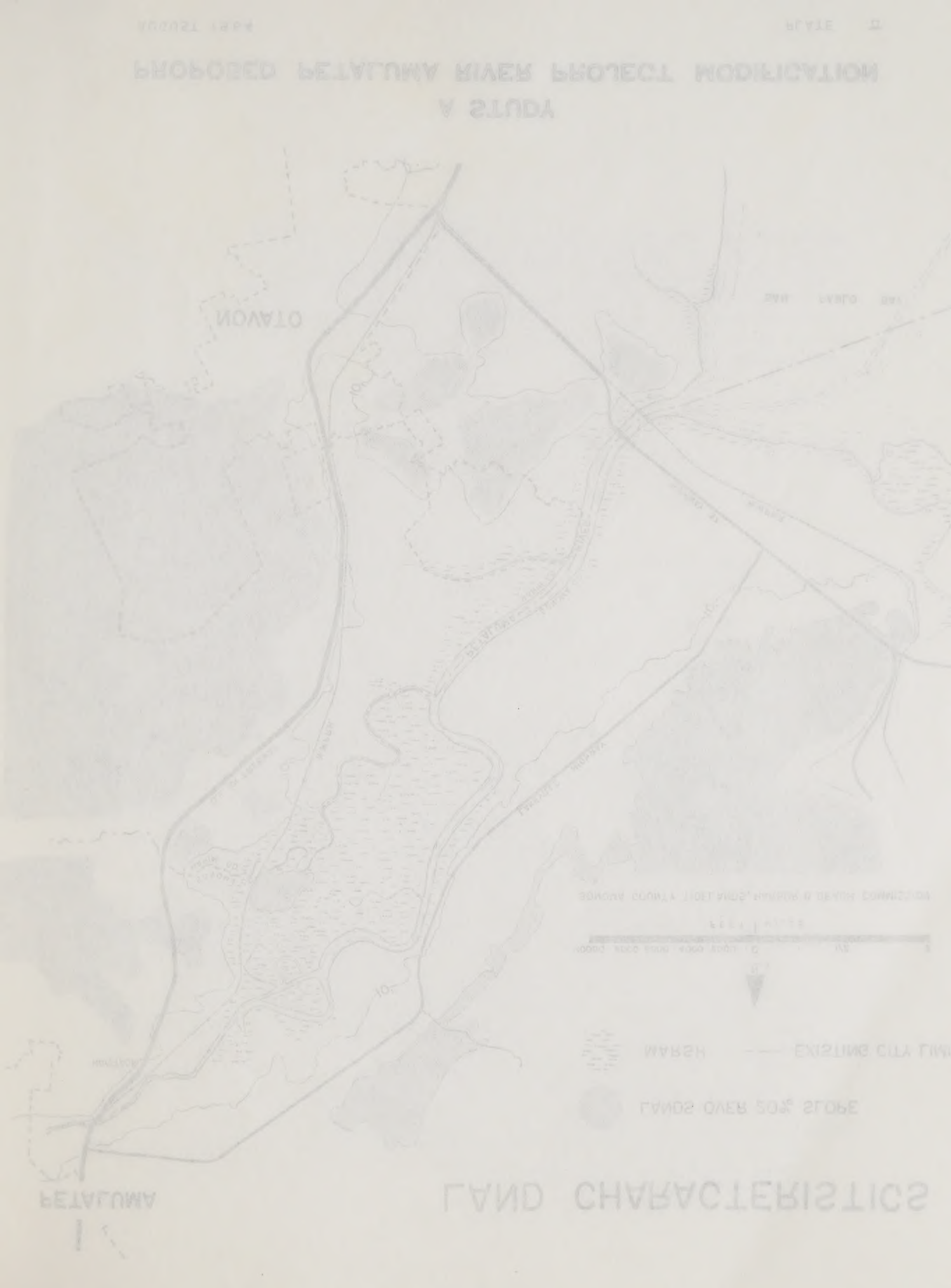


A STUDY

PROPOSED PETALUMA RIVER PROJECT MODIFICATION

AUGUST 1964

PLATE II


NOVATO
PETALUMA

Area, as well as to the Central Valley of the state.

Airports

Three small airports are found within six miles of the geographical center of the study area. These airports are: Marin County Airport, located west of the Petaluma River, two miles north of Novato on the east side of U.S. 101; Petaluma Sky Ranch, located north of the study area, two and one-half miles east of downtown Petaluma on the south side of Washington Street; and Sonoma Valley Airport, located two miles south of Schellville on the east side of State Highway 121.

All three of these airports, with runways of 3,000 feet or less, serve small private and business aircraft. If at some future date an airport of the type mentioned above (i.e. to serve small private and business aircraft) is required within the study area, there is more than adequate space adjacent to Lakeville Highway.

EXISTING LAND USE

Almost 100% of the useful land (this excludes the 3,000 acres of marshland) is utilized for agricultural purposes. This includes dairy ranches, cattle ranches, and oat hay production.

The remaining land uses consist of a service station, auto repair shop, and school (all located at the intersection of Lakeville Highway and Stage Gulch Road), Gilardi's Resort (a small fishing resort located one mile south of the above mentioned intersection), and a dredging equipment storage area (located south of State Highway 37, just east of the mouth of the Petaluma River).

The 3,000 acres of marshland are utilized for recreational purposes, namely hunting for waterfowl.

POPULATION

The study area presently contains a population of 250 persons, resulting in a density of one person per 48 acres (excluding the 3,000 acres of uninhabited marshlands). Due to the lack of adequate water and sewerage facilities, the immediate growth rate of the area is anticipated to be quite negligible. When these problems are corrected, however, the area should undergo a rather rapid transition from its present rural character to an urban character.

In light of the above information, it would seem that the only valid population statistics which could be presented would be of a holding capacity nature. As such, the lands designated for planned unit types of development comprise 11,120 acres. Using 8 persons per acre (standard

average urban density) a saturation population of 98,000 persons could reside in the study area.

Again, it must be stressed that this is the ultimate capacity of the land and no dates are given stating when or if this saturation population would be reached. Although considering the area's time-distance location from San Francisco, it would seem that when water and sewer problems are solved this ultimate population could eventually be realized.

THE PETALUMA RIVER

History

The Petaluma River, discovered in 1776 by Captain Fernando Quiros while searching for a waterway to Bodega, had its beginning as a commercial waterway in 1851 when the large rowboat "Spark" began hauling wild game to restaurants in San Francisco. In this 113 year history such cargoes as eggs, poultry, grain, oyster shells, sand, passengers, and concrete products have been transported on the Petaluma River.

In more recent years the City of Petaluma has developed into the major distribution center of petroleum products for the North Bay (namely, Marin, Sonoma, Lake and Mendocino Counties). In 1963 alone, close to 79.5 million gallons of petroleum products were shipped to Petaluma for distribution in this four county market area. Other products presently being transported on barges via the Petaluma River include grain, oyster shells, and precast and prestressed concrete products.

Since the river had its beginning as a commercial waterway, numerous projects have been undertaken to improve it. In 1880 the U.S. Army Engineers spent $8,000 widening the river to 50 feet and deepening it to three feet at low tide. Then on July 3, 1930, an Act was adopted by Congress providing for a dredged channel 200 feet wide, eight feet deep across the mud flats in San Pablo Bay to the mouth of the river, thence, 100 feet wide, eight feet deep, to Western Avenue in Petaluma, including a turning basin 300 to 400 feet wide and eight feet deep, thence, 50 feet wide, 4 feet deep, to Washington Street Bridge. This authorized project was completed in 1933 and is presently under maintenance at a total cost of $1,647,480. (See Plate III)

Economic Aspects of the River

Much of the data contained in this section of the study has been taken from An Economic Study of the Petaluma River, April, 1963, released by the Sonoma County Industrial Development Board. In gathering this data, the Industrial Development Board sent questionnaires to 5 oil companies and all ship carriers that transport commodities on the Petaluma River.

In 1963 a total volume of 79,450,000 gallons of petroleum products, valued at $16,979,000 (94.6 per cent of the total dollar volume of all river commerce for that year) and 37,437 tons of miscellaneous products

(grain, oyster shells, and precast and prestressed concrete) valued at $971,000 were transported by barge on the Petaluma River. This total volume of 79,450,000 gallons of petroleum transported in 1963, was up 5.9 per cent[1] (9,455,000 gallons valued at $3,091,000) over the volume of petroleum products transported in 1962. These same petroleum products accounted for 72 per cent of all barge traffic. In the six years, 1958 - 1963, petroleum product volume increased 25 per cent adding an estimated 2-1/3 million gallons annually.

These increased petroleum shipments are the result of an increasing population and an increase in the per capita consumption of gasoline. Three of the reporting oil companies listed consumer demand as the reason for the steady increase in cargo volumes. The fourth, Richfield, attributes its increasing shipments to "changes in competitive distribution costs."

Between 1958 and 1962 the tonnage of miscellaneous products transported on the river increased over 100 per cent (39,000 tons in 1958 valued at $903,000 to 78,053 tons in 1963 valued at $2,643,000). This is an average increase of 10,000 tons (valued at $435,000) per year. Between 1962 and 1963, a considerable decrease (52 per cent) in the volume of miscellaneous products transported on the river took place. This is directly attributable to Ben C. Gerwick, Inc., producers of concrete structures, whose shipments dropped from 24,400 tons, valued at $1,550,000 to 8,540 tons, valued at $450,000. Arnold L. Brown, the manager of Ben C. Gerwick, Inc., Petaluma Plant, attributes this to the character of the industry and states that their "outlook for 1964 is favorable. With jobs in progress and pending, we now have an estimated value of $1,000,000 in concrete products to transport by barge." [2]

As a result of this favorable outlook for Ben C. Gerwick, Inc. the tonnage and dollar volume of miscellaneous products transported on the river in 1964 should be close to those of 1962, which were the highest in the river's recent history.

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1. In calculating this 5.9 per cent increase between 1962 and 1963, gallonages reported by Texaco and Wilshire Oil Companies were not included because such figures were not released by these companies for the years previous to 1963.

2. An Economic Study of the Petaluma River, April, 1963, - Supplement D, Page 15

Anticipated Growth

The four county market area (Marin, Sonoma, Lake, and Mendocino) is expected to have a population of 763,300 by 1980. This is over a 100 per cent (404,000 person) increase in the period from 1960 to 1980. In this same period gasoline consumption for this market area should increase 116 per cent to 266 million gallons, an actual increase of 143 million gallons.[3]

If the river continues to carry the same proportion of all petroleum products distributed to this market area, total shipments via the Petaluma River by 1980 should be in excess of 160 million gallons which would just keep pace with normal growth.

Although the dollar and cargo volumes of Petaluma River commerce have grown steadily in recent years, a number of problems have been encountered which have actually retarded this growth potential; namely, channel depth and width. These inadequate depths and widths result in carriers being loaded at less than 100 per cent capacity and operating only at times when tidal action permits, thus, resulting in higher rates to the shippers.

Not only have these inadequate depths and widths restrained increases in the volumes of cargo carried, they have also deterred potential industries from locating in Sonoma County, thus resulting in the loss of jobs and tax revenues for the county. The following correspondence taken from questionnaires sent to a number of shippers and carriers demonstrates this.

Shippers

R.T. Hunt, Traffic Manager of Richfield Oil Company states: "Whether our gallonage received at Petaluma would increase is dependent upon the common carrier barge rates. There is an additional quantity of 3,400,000 gallons (a dollar volume of $378,208) which could move by barge to Petaluma if the rate were favorable." [4]

M.N. Young, Plant Superintendent of Shell Oil Company states: "Due to shallow water, long delays are frequent which results in abnormally high transportation costs....

"If some improvements (in the channel) are not made, it is possible that the North Bay Area may be served directly from the refinery at Martinez by truck and trailer instead of by barge through the Petaluma terminal. Improvement of highways and bridges are gradually making truck transportation more favorable. The poor conditions of the Petaluma River channel makes water transportation less attractive by comparison". [5]

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3. Ibid, page E-3
4. Ibid, page D-4
5. Ibid, pages D-6, 5-A

C.C. Fox, Superintendent of Traffic, Tidewater Oil Company, states: "If (the) channel is improved, it would permit large cargoes to be hauled, hence possible lower rates:" [6]

E.G. Henderson, Terminal Superintendent for Union Oil Company, states: "There are many times now that we are out of stock because the barges cannot come up the river except on high tides and are unable to bring up a capacity load.... when there is a fog condition, they might be held up for a few days, whereas if the channel was improved, they could come up during the day time and not depend on the tides.

"This condition is going to become more critical as the demand for petroleum products increase with population growth.

"If the barge service is not made dependable, the oil companies could be forced to eliminate their bulk terminals on the Petaluma River and haul directly from their refineries." [7]

E.F. Brovelli, President of Basalt Rock Company (a former shipper on the Petaluma River), stated: "We have found it more economical to ship by other means; namely, trucks.

"If the river were improved, we would consider re-appraisal of the possible reduced costs of transportation as compared with the present trucking costs and if lower, would return to water transport." [8]

Carriers

C.L. Cary, General Manager of J.C. Freese Company, says: "The Petaluma River at the present time is a marginal operation, due to the depth of this waterway, as it can only be operated on at and during a high tide. If you are successful in deepening this channel to 15 feet, it would enable us to operate with larger equipment, which naturally would result in lower petroleum rates." [9]

Lester C. Bedient, General Manager of The Harbor Tug and Barge Company, says: "Today it is necessary to use large barging equipment to offset the rising labor costs and the present depth of the Petaluma Channel does not allow the carrier to make the most economical use of their equipment." [10]

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6. Ibid, page D-10
7. Ibid, page D-13
8. Ibid, pages D-15, D-16
9. Ibid, page D-33
10. Ibid, page D-39

C.C. Fox, Superintendent of Traffic, Tidewater Oil Company, states: "If (the) channel is improved, it would permit large cargoes to be handled, hence possible lower rates." 6

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"This condition is going to become more critical as the demand for petroleum products increase with population growth.

"If the barge service is not made dependable, the oil companies would be forced to eliminate their bulk terminals on the Petaluma River and haul directly from their refineries." 7

E.F. Hoveitt, President of Basalt Rock Company (a former shipper on the Petaluma River), stated: "We have found it more economical to ship by other means; namely, trucks.

"If the river were improved, we would consider terminating at the possible reduced costs of transportation as compared with the present trucking costs and it (were), would return to water transport." 8

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6. Ibid, page B-10
7. Ibid, page B-13
8. Ibid, pages B-15, B-16
9. Ibid, page B-33
10. Ibid, page B-34

R.W. Dyer, General Manager of United Towing, says: "Due to the fact that the Petaluma River is strictly a tidal operation in its present condition, our customers are forced to work considerable overtime to receive barges on the tide. Deepening of the channel would eliminate this overtime permitting us to make deliveries during regular working hours. It would also eliminate equipment delays waiting for proper tides. During the tule fog season, these delays are extremely costly as it often happens that when the tide is right, the fog is too thick to move and when the fog clears, the tide is at the wrong stage.

"For your information, one of our related companies, Oil Terminals Company, is in final negotiation to establish an industry bulk petroleum terminal on Petaluma River on property owned by this company adjacent to the Mobil Oil Company terminal. When these negotiations are completed it is contemplated that several companies will use this one terminal permitting us to combine loads to whatever draft is permitted by the condition of the Petaluma River. Obviously, therefore, a fifteen foot depth of channel would permit full use of the capacity of our barges on each trip and this in turn, would enable us to offer a transportation rate saving to our customers. We estimate that a 15-foot depth of channel would permit full loads which would allow us to reduce our present transportation rate by about one cent per barrel." 11

Recent & Pending Industrial Development

"Fibercrete Corporation opened its Petaluma casting plant in January, 1963. The Company makes bouyant concrete modular unit structures for marine mooring and docking. The Petaluma location was selected because of the recreational development potential in Northern California, and because the product and its water oriented market are both particularly suited to barge transportation.

"At present, Fibercrete is compelled to use motor carrier because it is not possible, due to limited channel depths, to move large enough barges into Petaluma. Fibercrete will remain at its new location, and continue to ship its structures by highway, until the time when channel modification makes it possible to use the transporation medium of choice, namely barges.

"The Goslock Company has suspended its site location studies of the Petaluma River front for heavy construction steel fabrication, pending commitment of Petaluma River modification. The company's principal makes it plain that the availability of adequate water-borne transport is an important element in the new plant's economic feasibility. He states that

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11. Ibid, Page D-63

given such facilities (a deepened and widened channel) in the Petaluma area, it would be possible to revive our interest in such an operation."[12]

In view of the above correspondence and the anticipated growth of Petaluma's four-county market area, the proposed channel modification as presented below is more than warranted.

Proposed Petaluma River Channel Modification (See Plate III)

The proposed modification of the existing Petaluma Navigation Project would provide a channel 15 feet deep and 200 feet wide from San Pablo Bay to Cut-off B; thence, 15 feet deep and 125 feet wide to about the upstream end of Cut-off A; thence,15 feet deep and 100 feet wide to about McNear's canal; thence, 10 feet deep and 100 feet wide to the turning basin above "D" Street.

Local Contributions

If the proposed Petaluma River Channel Modification, as presented above is justified by a feasibility study of the U.S. Army Corps of Engineers, it can be anticipated that the County of Sonoma will have certain obligations to meet before the Corps of Engineers submits their recommendations to Congress for formal action. These obligations, termed "local contributions", can be expected to encompass the following:

1. The county will have to provide, without cost to the United States, all lands, easements, and rights of way for:

   (a) Any lateral expansion of the river channel. At the present time a large area of land adjacent to the existing channel is under the control of the State Lands Commission. As a result, it is doubtful that the county would have to purchase any lands for this purpose.

   (b) The retention and deposition of dredging spoils. This includes not only the dredging spoils which will result from original project modification, but any maintenance dredgings which accrue for a period of 50 years.

   While the Sonoma County Industrial Development Board has previously released figures indicating there is an area capable of receiving 41 million

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12. Ibid, Pages E-6 and E-8

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   (a) Any lateral expansion of the river channel. At the present time a large area of land adjacent to the existing channel is under the control of the State Lands Commission. As a result, it is doubtful that the county would have to purchase any lands for this purpose.

   (b) The relocation and disposition of existing spoils. This includes not only the dredging spoils which will result from original project modification, but any maintenance dredgings which occur for a period of 50 years.

   While the Sonoma County Industrial Development Board has previously released figures indicating there is an area capable of receiving $1 million

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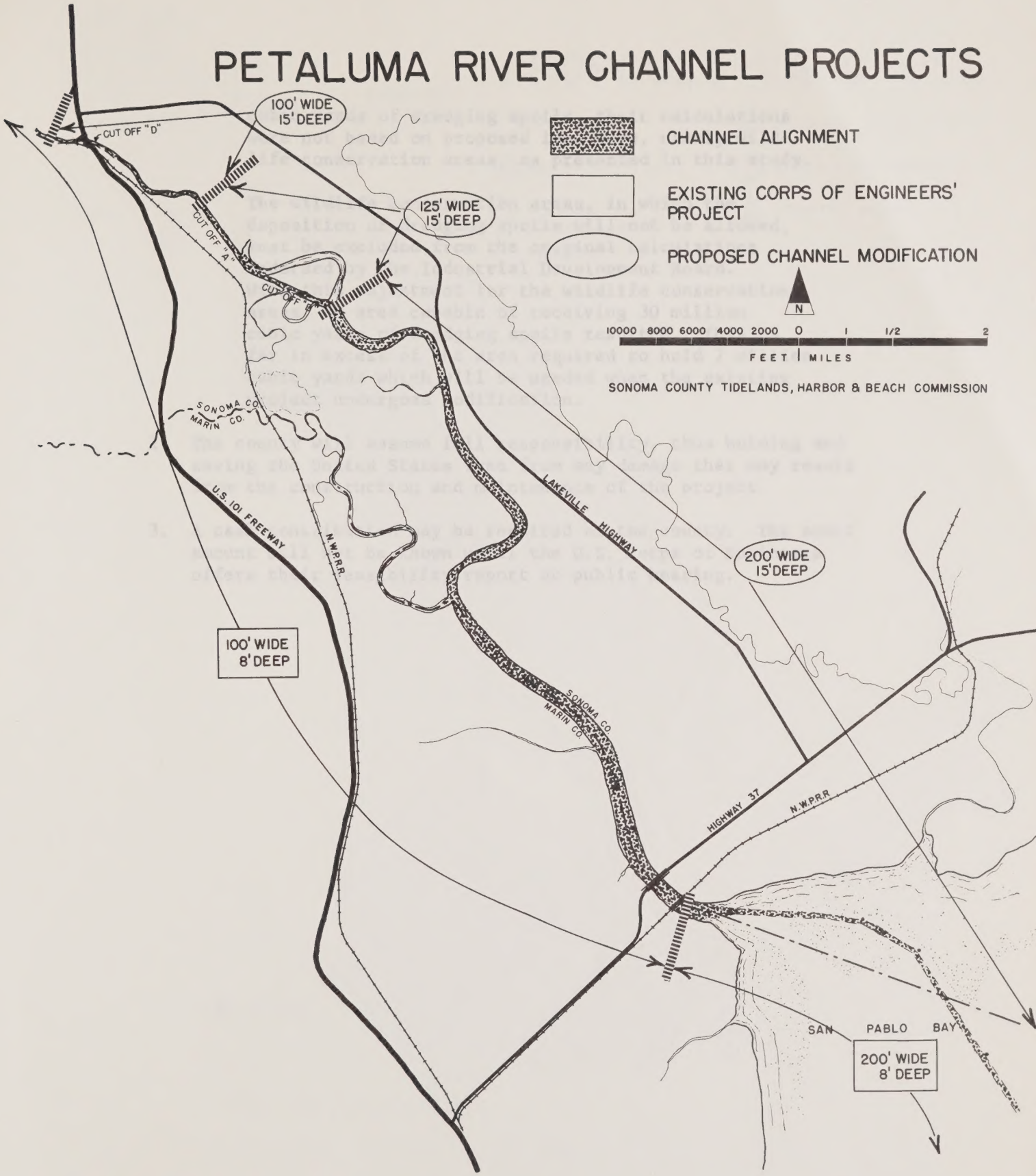
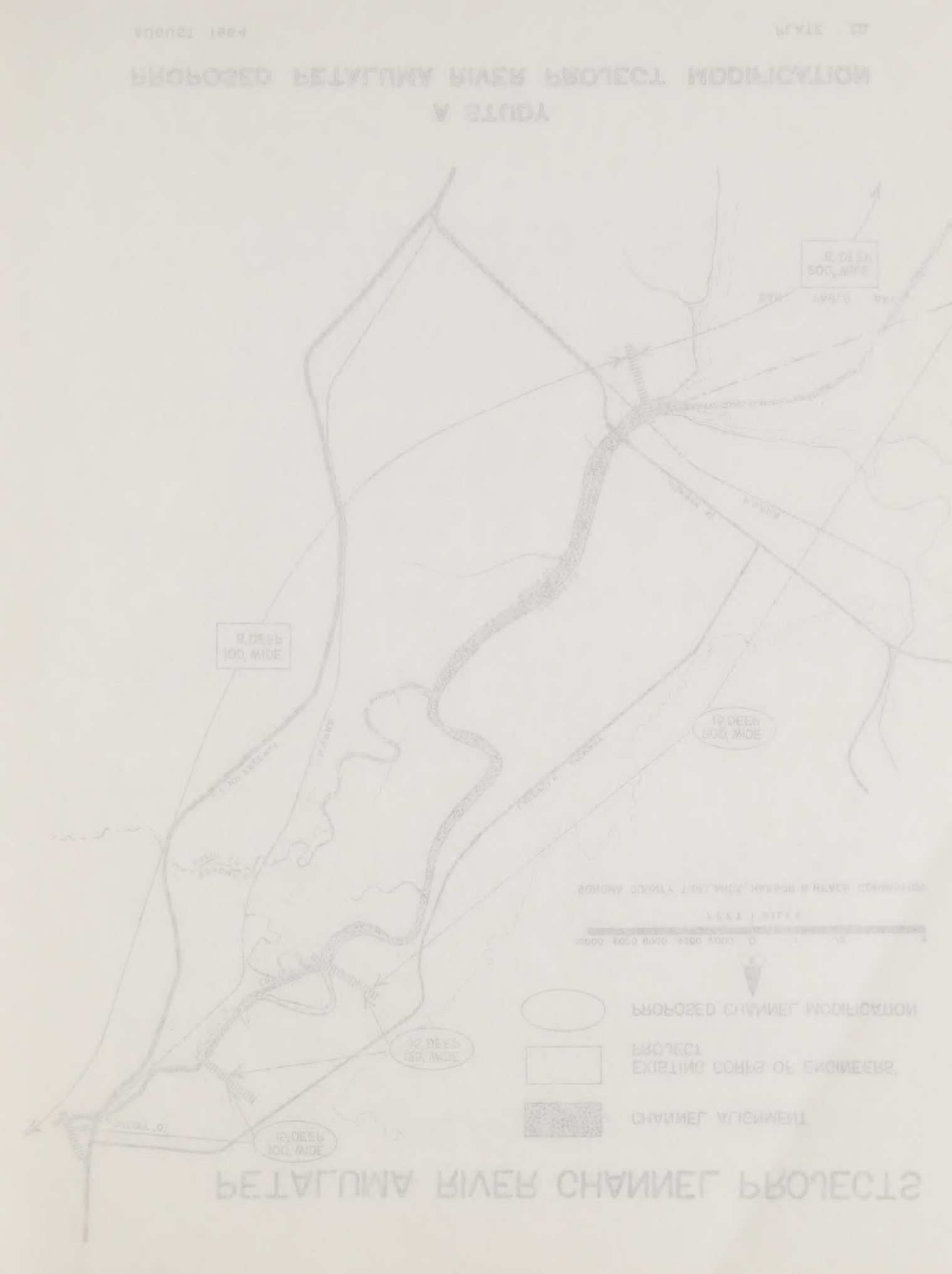
12. Ibid, Pages 5-6 and 5-8



A STUDY
PROPOSED PETALUMA RIVER PROJECT MODIFICATION

AUGUST 1964

PLATE III

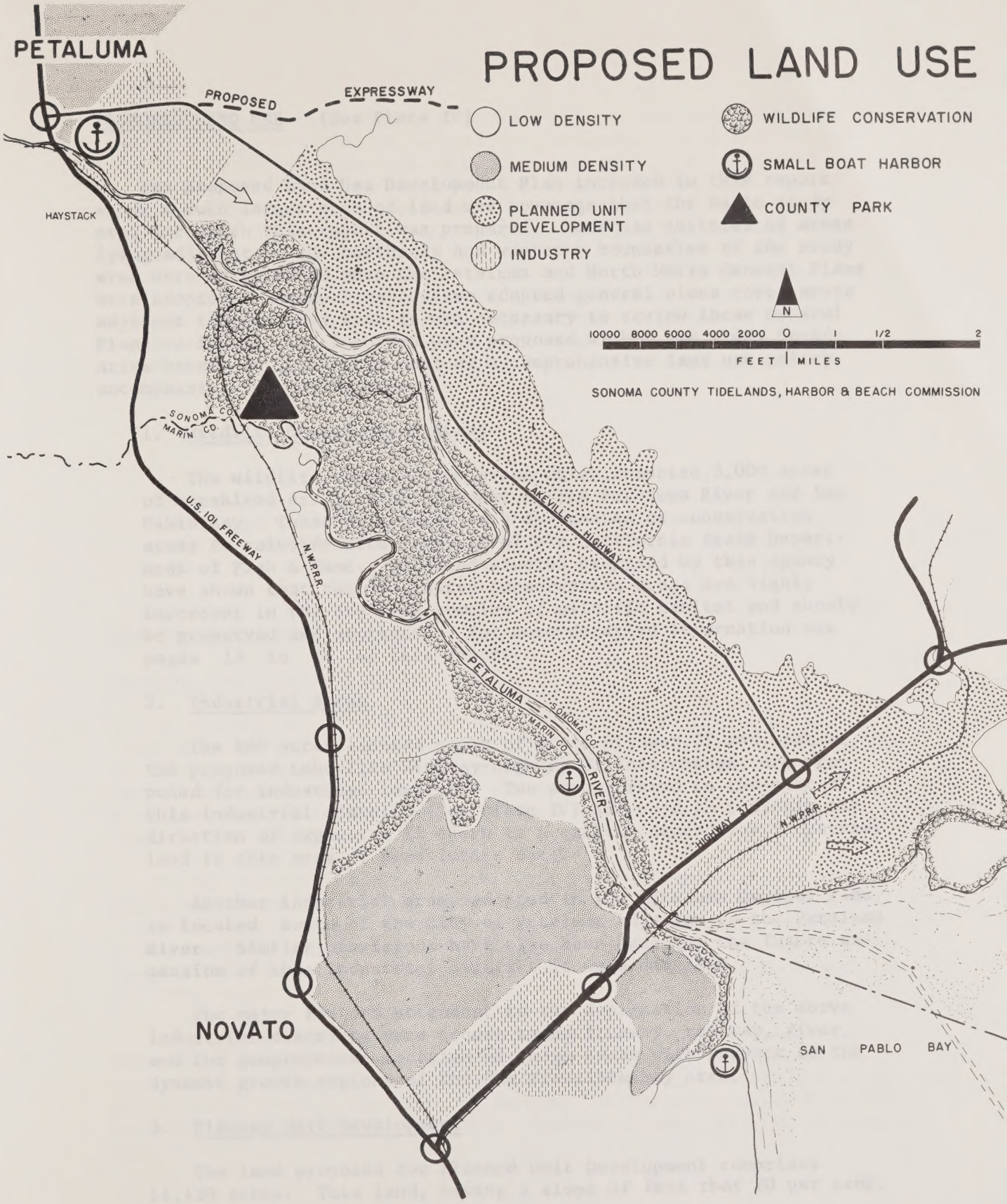

PROPOSED CHANNEL MODIFICATION
PROJECT
EXISTING CORPS OF ENGINEERS
CHANNEL ALIGNMENT

cubic yards of dredging spoils, their calculations were not based on proposed land uses, namely wildlife conservation areas, as presented in this study.

The wildlife conservation areas, in which the deposition of dredging spoils will not be allowed, must be excluded from the original calculations endorsed by the Industrial Development Board. With this adjustment for the wildlife conservation areas, an area capable of receiving 30 million cubic yards of dredging spoils resulted. This is far in excess of the area required to hold 7 million cubic yards which will be needed when the existing project undergoes modification.

2. The county will assume full responsibility, thus holding and saving the United States free from any damage that may result from the construction and maintenance of the project.

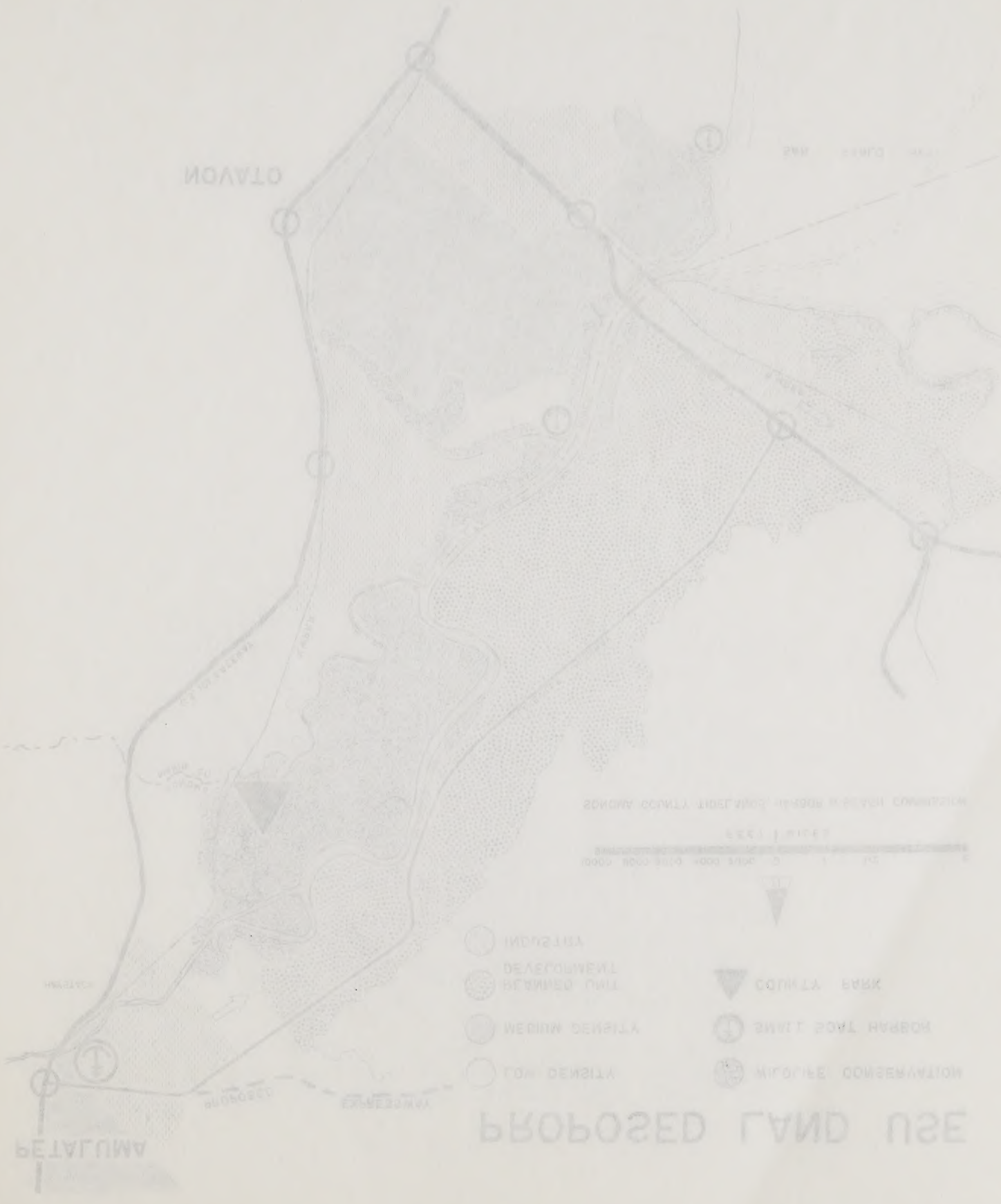
3. A cash contribution may be required of the county. The exact amount will not be known until the U.S. Corps of Engineers offers their feasibility report at public hearing.



A STUDY
PROPOSED PETALUMA RIVER PROJECT MODIFICATION

AUGUST 1964

PLATE IV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PROPOSED LAND USE (See Plate IV)

The proposed Land Use Development Plan included in this report shows a much larger area of land use coverage that the basic study area for which this report was prepared. Land use policies of areas lying adjacent to the northerly and westerly boundaries of the study area were established when the Petaluma and North Marin General Plans were adopted. Inasmuch as the two adopted general plans cover areas adjacent to the study area it was necessary to review these General Plans to insure that the land uses proposed within the study boundaries became an integrated part of a comprehensive land use policy encompassing the entire region.

1. Wildlife Conservation Areas

The wildlife conservation areas which comprise 3,000 acres of marshland are located adjacent to the Petaluma River and San Pablo Bay. These marshlands were designated as conservation areas to coincide with findings of the California State Department of Fish & Game. Detailed studies prepared by this agency have shown that the designated conservation areas are highly important in the Bay Area complex of wildlife habitat and should be preserved and protected. For more detailed information see pages 15 to 16 of this report.

2. Industrial Areas

The 880 acres, located south of State Highway 37 and west of the proposed Lakeville Highway-Highway 37 interchange, are proposed for industrial land use. Two arrows shown to the east of this industrial district (See Plate IV) are used to indicate the direction of expansion if there is a greater demand for industrial land in this area at some future date.

Another industrial area, adopted in the Petaluma General Plan is located south of the City of Petaluma adjacent to the Petaluma River. Similar provisions have also been made for the future expansion of this industrial district if need develops.

The major factors attendant to the designation of the above industrial districts were access to the freeway, railway, river, and the geographical location of these areas with respect to the dynamic growth regions of the San Francisco Bay Area.

3. Planned Unit Development

The land proposed for Planned Unit Development comprises 11,120 acres. This land, having a slope of less that 20 per cent.

PROPOSED LAND USE (See Plate IV)

The proposed Land Use Development Plan included in this report shows a much larger area of land use coverage than the basic study area for which this report was prepared. Land use policies of areas lying adjacent to the northerly and westerly boundaries of the study area were established when the Petaluma and North Marin General Plans were adopted. Inasmuch as the two adopted general plans cover areas adjacent to the study area it was necessary to review these General Plans to insure that the land uses proposed within the study boundaries became an integrated part of a comprehensive land use policy encompassing the entire region.

1. Wildlife Conservation Areas

The wildlife conservation areas which comprise 3,080 acres of marshland are located adjacent to the Petaluma River and San Pablo Bay. These marshlands were designated as conservation areas in cooperation with findings of the California State Department of Fish & Game. Detailed studies prepared by this agency have shown that the designated conservation areas are highly important in the Bay Area complex of wildlife habitat and should be preserved and protected. For more detailed information see pages 15 to 19 of this report.

2. Industrial Areas

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The major factors attendant to the designation of the above industrial districts were access to the freeway, railway, river, and the geographical location of these areas with respect to the dynamic growth regions of the San Francisco Bay Area.

3. Planned Unit Development

The land proposed for Planned Unit Development comprises 11,120 acres. This land, having a slope of less than 30 per cent.

would lend itself well to an urban type of community complex. No attempt was made to identify or delineate specific areas for the necessary commercial, public, quasi-public, and multiple residential uses that will serve a comprehensive planned community because the extent and location of these various uses would be determined at such time as precise plans are submitted for review.

Considering the location of bodies of water with respect to the study area, it can be anticipated that a number of marina developments with water front site locations, boating and other recreational facilities could be developed in conjunction with the Planned Communities.

4. Park Area

The county park within the Neil Island area (See Plate IV) is proposed in the Sonoma County Recreation Plan which will be considered for formal adoption by the Sonoma County Planning Commission and Board of Supervisors at a time prior to January 1, 1965.

STUDIES RELATING TO THE LAND USE DEVELOPMENT PLAN

Existing and Potential Water Supplies

At present the only water supplies available to residents of the study area are ground water supplies from fresh water wells. According to the Sonoma County Flood Control and Water Conservation District, "nearly all wells in the area are showing considerable evidence of salt water intrusion," so this source of water in any large quantity and quality would not be suitable.

At the same time surface waters from surrounding rivers and creeks (Petaluma, Tolay, and Sonoma) are of no value because they are intermittent in character and at best have fresh water flow only during periods of peak storm runoff in wintertime, with all water in these streams during the summer months being essentially tidal waters from the San Francisco and San Pablo Bays.

As was mentioned earlier in this report, the limited quantity and quality of water within the study area is one of the key factors in restraining development. With the owners of property within the study area and adjacent lands (See Plate V) forming the North Bay Water District on December 30, 1963, there now exists a number of possibilities to correct this situation.

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The county park within the Mark Island area (See Plate IV) is proposed in the Sonoma County Recreation Plan which will be considered for formal adoption by the Sonoma County Planning Commission and Board of Supervisors at a time prior to January 1, 1965.

STUDIES RELATING TO THE LAND USE DEVELOPMENT PLAN

Existing And Potential Water Supplies

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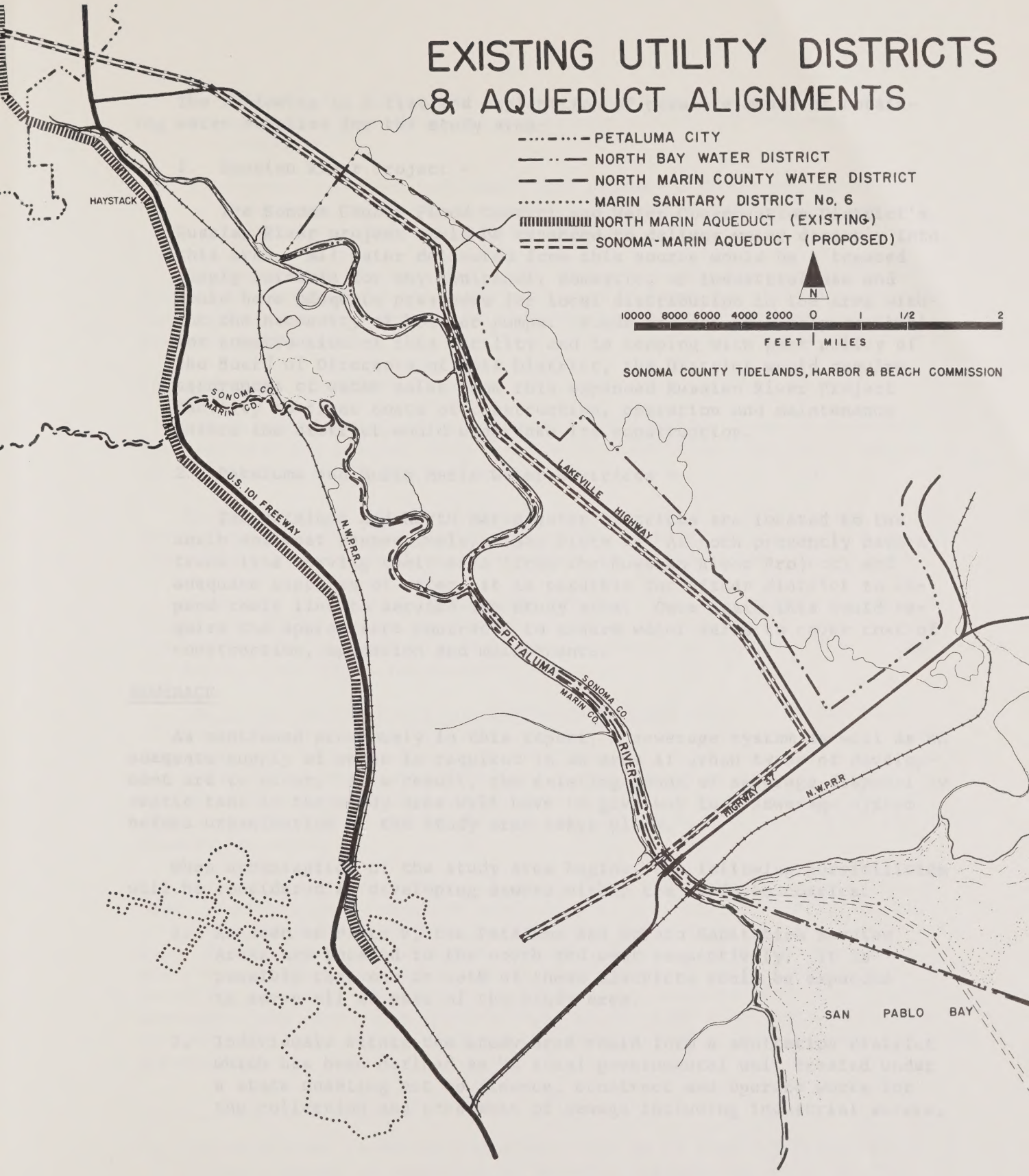
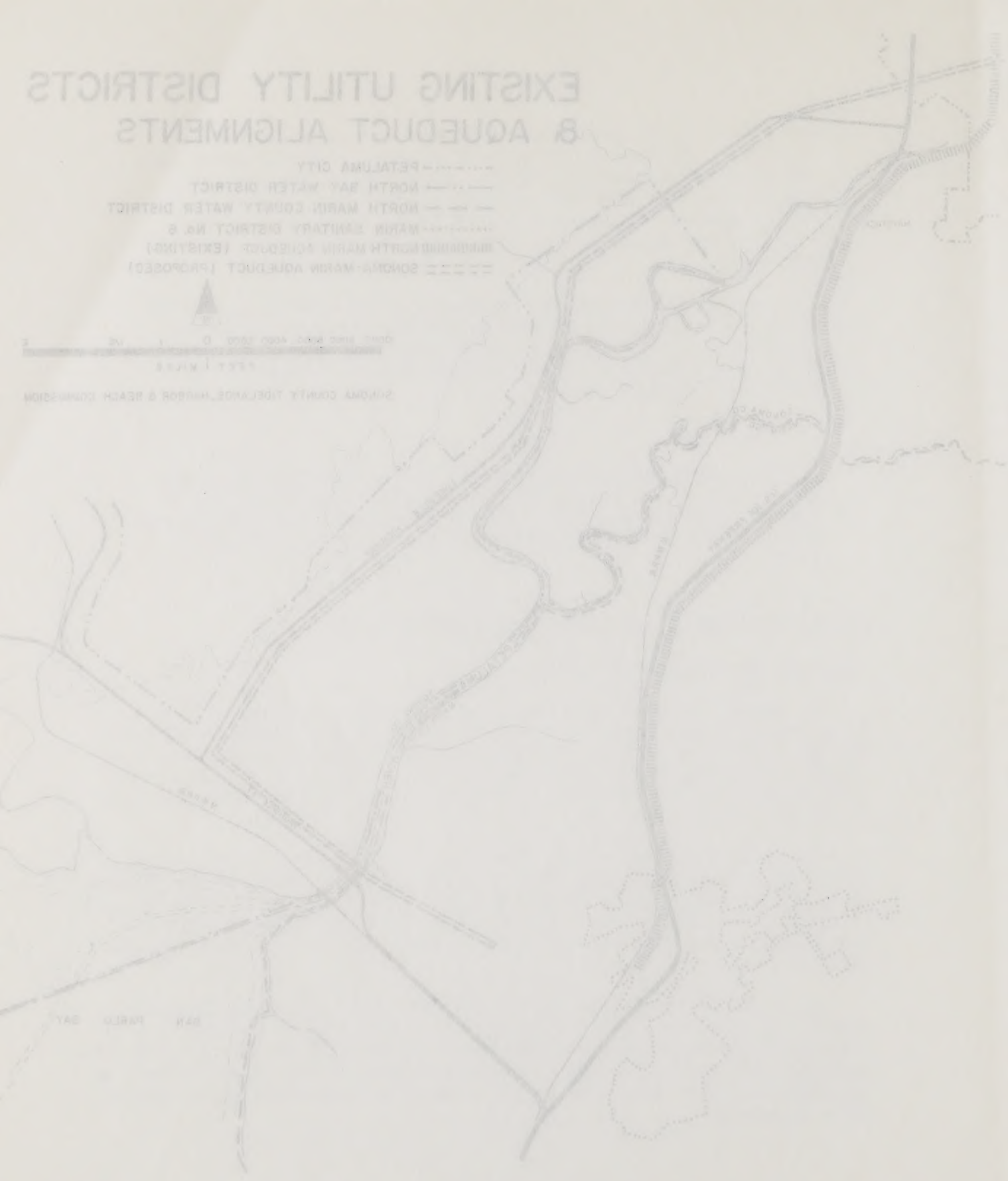
As was mentioned earlier in this report, the limited quantity and quality of water within the study area is one of the key factors in restraining development. With the owners of property within the study area and adjacent lands (See Plate V) forming the North Bay Water District on December 30, 1963, there now exists a number of possibilities to correct this situation.



A STUDY
PROPOSED PETALUMA RIVER PROJECT MODIFICATION

AUGUST 1964

PLATE V



The following is a list and explanation of possible means of obtaining water supplies for the study area:

1. Russian River Project -

The Sonoma County Flood Control and Water Conservation District's Russian River project could be expanded to deliver water directly into this area. All water delivered from this source would be a treated supply suitable for any municipal, domestic, or industrial use and would have adequate pressures for local distribution in the area without the necessity of booster pumps. Funds are not presently available for construction of this facility and in keeping with past policy of the Board of Directors of this District, the District would require assurances of water sales from this expanded Russian River Project facility to cover costs of construction, operation and maintenance before the district would undertake its construction.

2. Petaluma and North Marin Water Districts -

The Petaluma and North Marin Water Districts are located to the north and west respectively. (See Plate V) As both presently have a trunk line serving their area (from the Russian River Project) and adequate supplies of water, it is possible for either district to expand their line to service the study area. Once again this would require the appropriate contracts to assure water sales to cover cost of construction, operation and maintenance.

SEWERAGE

As mentioned previously in this report, a sewerage system as well as an adequate supply of water is required in an area if urban types of development are to occur. As a result, the existing means of sewerage disposal by septic tank in the study area will have to give way to a sewerage system before urbanization of the study area takes place.

When urbanization of the study area begins, the following possibilities will be considered in developing sewers within the study boundaries.

1. As seen on Plate V, the Petaluma and Novato Sanitation Service Areas are located to the north and west respectively. It is possible that one or both of these districts could be expanded to serve all or part of the study area.

2. Individuals within the study area could form a sanitation district which has been defined as "a local governmental unit created under a state enabling act to finance, construct and operate works for the collection and treatment of sewage including industrial waters,

amenable to joint treatment and to provide adequate final disposal of the effluent and by-products of the treatment process."[13]

3. Private developers of individual planned developments could construct small treatment plants designed to serve their particular development or a small community.

Whichever form of the three types of sewerage systems mentioned above comes into existence in the study area will be dependent on the topography, the geographical relationship to existing sanitation districts and the economic feasibility.

FISH AND GAME (See Plate VI)

Within the planning boundaries are found numerous areas of important fish and wildlife habitat including the Petaluma River, San Pablo Bay and their adjoining 3,000 acres of marshland.

Petaluma River: Striped bass are found within the tidal waters of the river throughout the year. Although striped bass do not spawn here due to the lack of fresh water, it is very important as a feeding and nursery area.

According to the State Department of Fish and Game, somewhere between 10,000 and 20,000 angler days per year are spent fishing for stripers on the Petaluma River. Other fish caught incidental to striped bass include top smelt, jack smelt, and starry flounder.

San Pablo Bay Mud Flats and Surrounding Marshlands: Although very little angling occurs within these waters it is of prime importance to the angler as well as the hunter. It is within this area that many small vertebrate and invertebrate organisms (e.g. clams, mussels, oysters, crabs, shrimp, and bottom dwelling worms) are found which serve either directly and/or indirectly as food in the diet of the numerous fish and wildlife which inhabit the area.

The various types of fish and game found in this area include striped bass, green sturgeon, American shad, Pacific herring, and anchovies (fish); scaup, canvasback, redhead, bufflehead, ruddy duck, white winged scoter, surf scoter, American goldeneye, mallard, pintail, American widgeon, shoveler, green-winged teal, gadwall, Canada goose, white-fronted goose, and whistling swan (all waterfowl); avocet, willet, western sandpiper, red-backed sandpiper, and sanderling (shorebirds); gulls (seabirds); and Virginia rail, clapper rail, blue heron, snowy egret, American egret, and American coot (all marshbirds).

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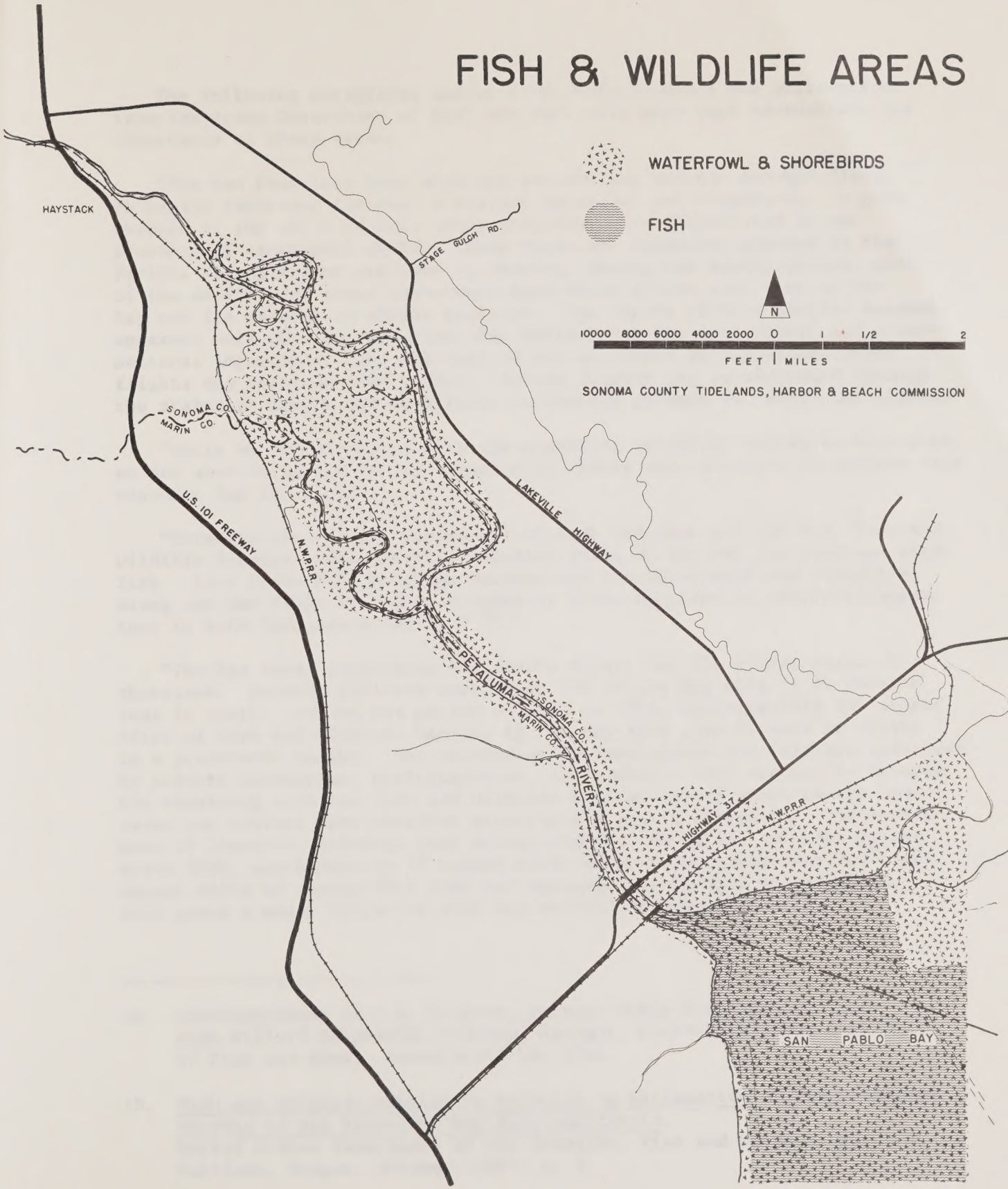
13. "Organization, Financing and Administration of Sanitary Districts." Progress Report of Committee of Sanitary Engineering Division, Proceedings of the American Society of Civil Engineers, 1954, p. 177.

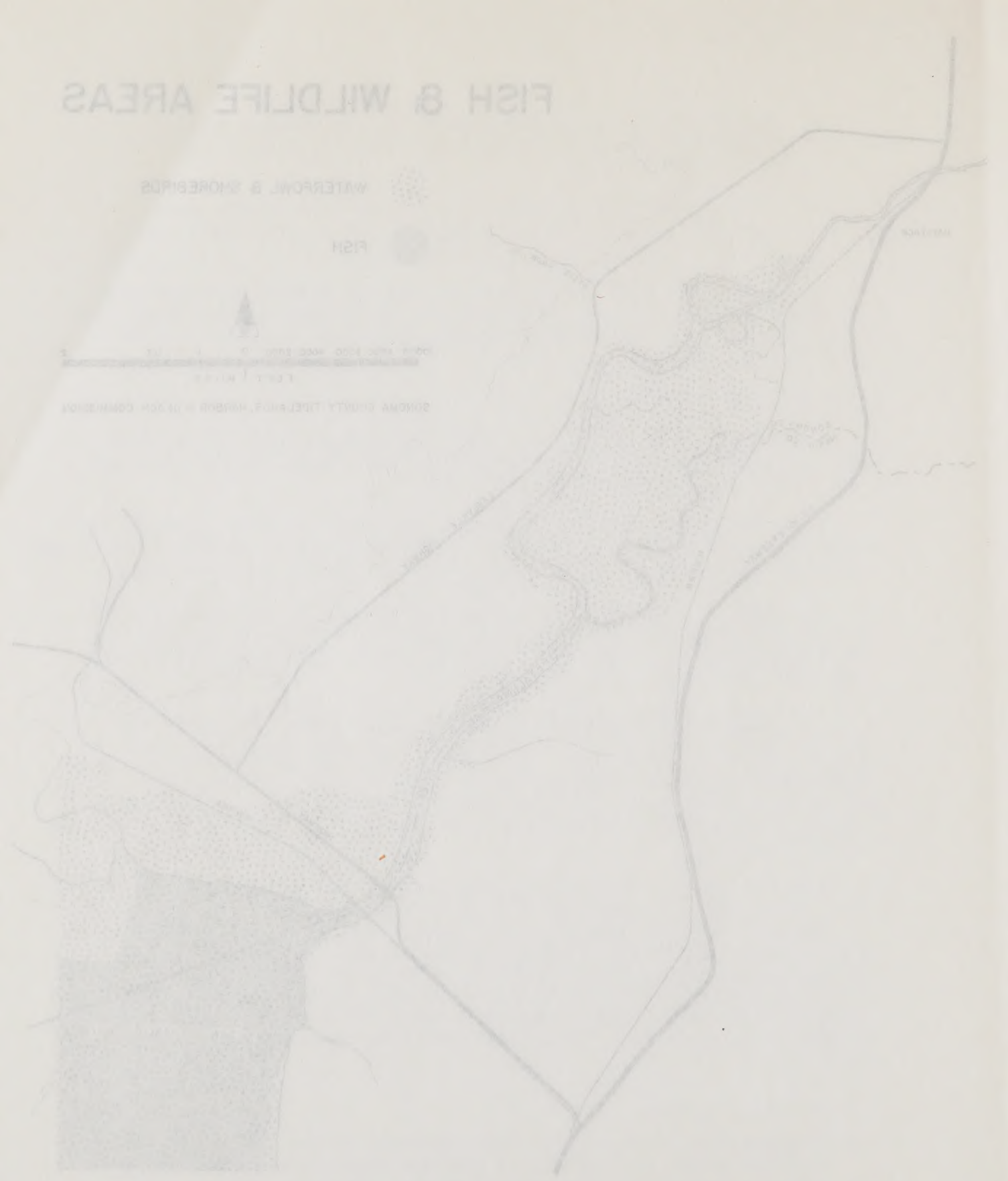


A STUDY

PROPOSED PETALUMA RIVER PROJECT MODIFICATION

AUGUST 1964

PLATE VI



The following paragraphs quoted from correspondence and publications from the State Department of Fish and Game will more than demonstrate the importance of these areas.

"The San Francisco Bay, with its surrounding marshes and mud flats, is highly important for over a million waterfowl and shorebirds. A good example of the value of this water environment is illustrated by the presence of canvasback ducks. These birds are important species in the Pacific Flyway and at one time or another, during the winter period, most of the entire west coast canvasback population spends some time on the Bay and its marshes as winter visitors. The import of this habitat becomes apparent only when we recognize that these birds are of national and international importance. The survival of the waterfowl on bay waters means flights may continue onto Mexico. Return flights can go northward through the states of Oregon and Washington to nesting grounds in Canada and Alaska.

"While we may wisely utilize the migrating waterfowl coming to this area, we are also obligated to our neighboring states and countries to protect this resource for the future.

"Recently the (State) Department of Fish and Game and the U.S. Fish and Wildlife Service cooperatively evaluated areas of the Bay for fish and wildlife. (See Plate VI). Petaluma Marshes and the marshlands and tideflats along the San Pablo Bay were included in areas regarded as extremely important to both fish and wildlife." [14]

"The Bay Area, comprising 435 square miles, has 276 linear miles of shoreline. Records indicate that about 70% of the Bay Area is 20 feet or less in depth. During the period of 1850 to 1958, approximately 255 square miles of fish and wildlife habitat in the Bay Area were drained or filled in a piece-meal manner. The uncoordinated development and land-use practices by private enterprise, municipalities, and counties will eventually destroy the remaining critical fish and wildlife habitat unless measures are undertaken for overall comprehensive planning and public ownership. The Department of Commerce estimates that unless present trends are reversed by the years 2020, approximately 78 square miles of unleveed marshlands and eight square miles of susceptible tide and submerged lands will be reclaimed. This poses a major threat to fish and wildlife populations," [15]

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14. Correspondence to J.H. Prather, Sonoma County Planning Director, from Willard Greenwald, Regional Manager, California State Department of Fish and Game. Dated April 16, 1964.

15. Fish and Wildlife Habitat In Relation to Reclamation of Tidelands and Marshes in San Francisco Bay Area California.
United States Department of the Interior, Fish and Wildlife Service: Portland, Oregon, October, 1963. p. 2.

RECOMMENDATIONS:

1. The Sonoma County Beach - Harbor, and Tidelands Commission approve and adopt the presented study and forward it to the Sonoma County Board of Supervisor recommending approval thereof.

2. The Sonoma County Board of Supervisors approve and adopt the study and forward it to the District Engineer, U.S. Army Corps of Engineers, San Francisco, California.

3. The Sonoma County Board of Supervisors authorized the presentation of this study at the public hearing held by the U.S. Army Corps of Engineers later this year, and that they also consider a resolution of intent accepting the responsibility of local cooperation as required therein.

4. If the Board of Supervisors approve in principle, the proposed Land Use of the study area, as presented, then said approval shall constitute a Land Use Policy of the Board pending future precise planning.

SONOMA COUNTY
CALIFORNIA

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